

REMARKS

Claims 1-7, 11, and 22-23 remain in the present application. Claims 8-10, 12-19, and 20-21 were previously cancelled without prejudice. Claims 1-7 and 11 are hereby amended. Claims 22-23 are newly added. No new matter is being added.

Claims Rejections

Claims 1-7 and 11 are rejected under 35 USC 102(e) as anticipated by Gerlach et al. (US Patent 6,683,320). Claims 1-7 and 11 are hereby amended. Applicants respectfully traverse this rejection with respect to the claims as now amended.

Claim 1, as amended, now recites as follows.

1. A method for automated focusing in an electron imaging system, the method comprising:

monitoring an energy filter cut-off voltage during electron imaging of a substrate; and

adjusting a stage bias voltage of the electron imaging system **in negative correspondence with** the energy-filter cut-off voltage so as to maintain a focus of the electron image.

(Emphasis added.)

The adjustment of the stage bias voltage (i.e. the wafer bias voltage) in negative correspondence with the energy-filter cut-off voltage is supported in the specification, for example, in FIGS. 3 through 5 and the description thereof. In particular, FIG. 5 (reproduced below for convenience) shows experimental data indicating the negative correspondence between the stage bias voltage required to maintain focus 504 and the energy-filter (EF) cut-off voltage 502.

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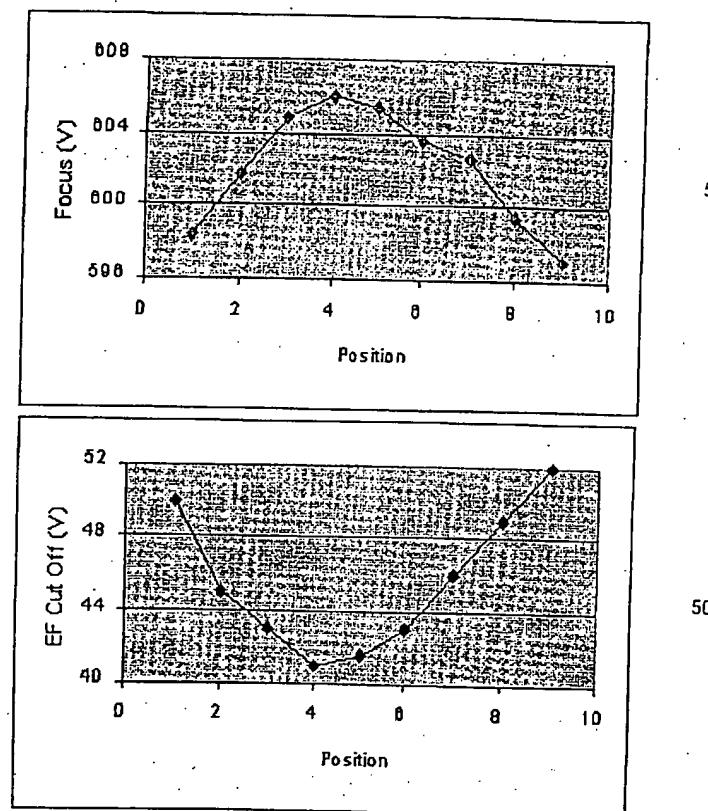


FIG. 5

The applicants respectfully submit that the claimed invention (of monitoring the EF cut-off voltage 502 and adjusting the stage bias 504 in negative correspondence thereto) is not disclosed or suggested in the cited art.

Col. 6, lines 33-49 of Gerlach

FIG. 1 of Gerlach (as discussed beginning on column 5, line 50) includes a first ion lens (not shown) positioned above the elements shown in FIG. 1 and a second ion lens 112 positioned near the sample 114. FIG. 1 of Gerlach is reproduced below for convenience.

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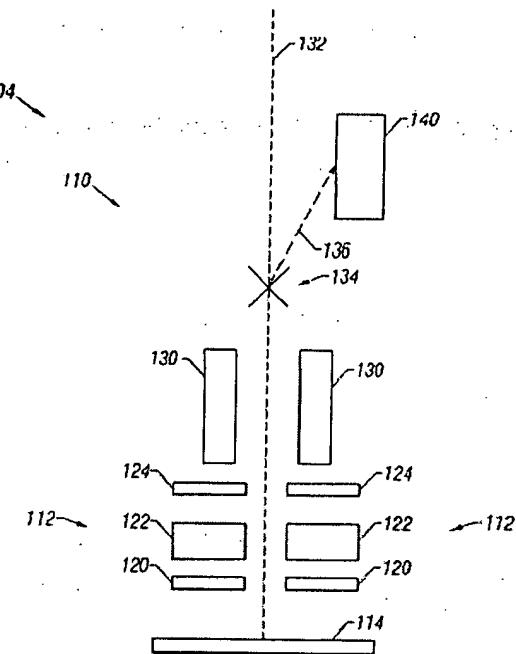


FIG. 1

The paragraph at col. 6, lines 33-49 of Gerlach discloses that changing the focusing properties of the second ion lens 112 may require compensating changes to the properties of the first ion lens (not shown). Hence, this paragraph discloses that changes in one lens may require changes in another lens. This paragraph does not disclose or suggest adjusting the stage bias voltage in negative correspondence with the EF cut-off voltage, as now required by amended claim 1 and illustrated by FIG. 5 of the present application.

Col. 7, line 62 to column 8, line 6 and FIG. 5 of Gerlach

The disclosure in Gerlach at col. 7, line 62 to column 8, line 6 discusses that secondary electrons having energies less than a cut-off voltage are lost from a signal (i.e. are not detected). FIG. 5 of Gerlach, reproduced below for convenience, shows a secondary electron energy distribution 504 having a cut-off energy 508.

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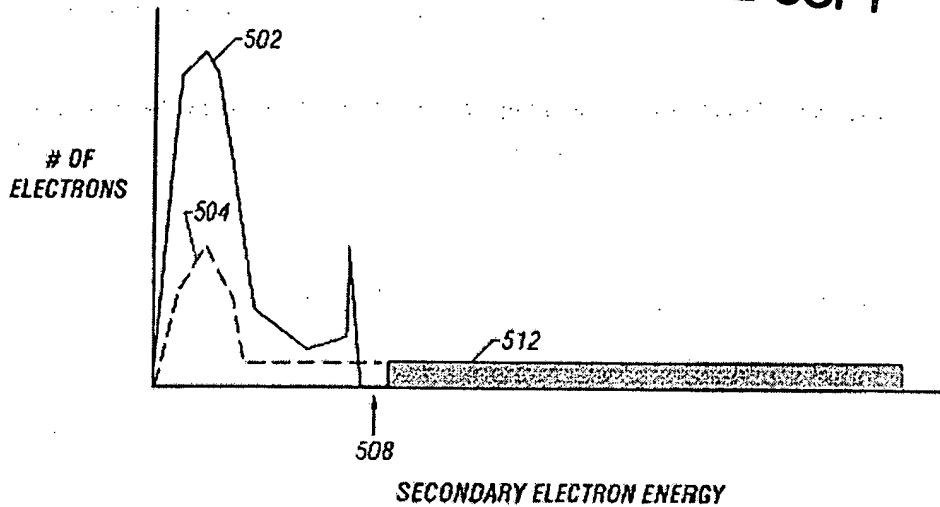


FIG. 5

Neither the disclosure at col. 7, line 62 to column 8, line 6 of Gerlach nor FIG. 5 of Gerlach disclose or suggest adjusting the stage bias voltage in negative correspondence with the EF cut-off voltage, as now required by amended claim 1 and illustrated by FIG. 5 of the present application.

For the above-discussed reasons, applicants respectfully submit that claim 1, as amended, is now patentably distinguished over the Gerlach et al. reference.

Claims 2 and 3, as amended, depend from claim 1 and further clarify the claimed invention. For at least the above reasons discussed in relation to claim 1, claims 2 and 3 are also now patentably distinguished over the cited art.

Claim 7, as amended, also depends from claim 1. For at least the above reasons discussed in relation to claim 1, claim 7 is also now patentably distinguished over the cited art. Claim 7 further requires that said adjusting provides for rough focusing of the electron image and that fine focusing be provided by conventional contrast-based focusing.

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Claims 4-6 depend from claim 1. Claims 4-6, as amended, recite alternative adjustments, instead of adjustments to the stage bias voltage. Gerlach neither discloses nor suggests these alternative adjustments as used in correspondence with the EF cut-off to maintain focus of the electron image.

Claim 11 is hereby amended similarly to claim 1. New claims 22-23 depend from claim 11. Hence, for at least the above reasons discussed in relation to claim 1, claims 11 and 22-23 are also now patentably distinguished over the cited art.

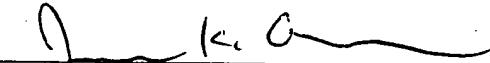
Conclusion

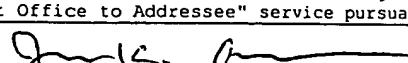
Applicants respectfully submit that claims 1-7 and 11, as amended, are now in patentable form. Favorable action is respectfully requested.

Respectfully submitted,
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